

INDIVIDUAL SPECIFICATION SHEET

Product Name: Transient Voltage Suppressors

Part Number: SM8SxxA Series

Revision: A



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Rev.	Effective Date	Changed Contents
A	2018-11-29	New Release

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APPROVED BY

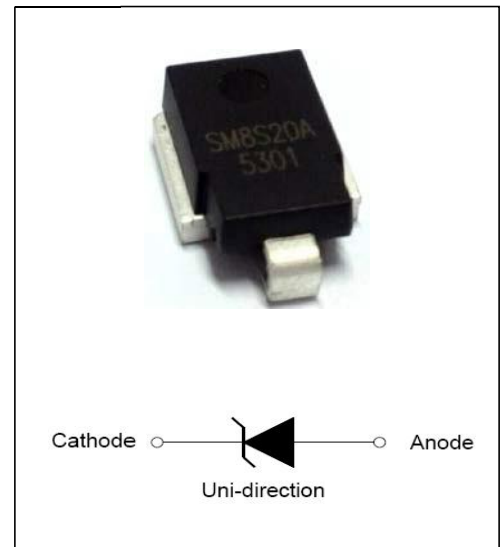



DESCRIPTION:

SM8S Series TVS diodes can be used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

FEATURES:

- ✧ Available in uni/bi-directional polarity.
- ✧ Low forward voltage drop & Low leakage current.
- ✧ High surge capability.
- ✧ Junction passivation optimized design passivated anisotropic rectifier technology.
- ✧ $T_J = 175^\circ\text{C}$ capability suitable for high reliability and automotive requirement.
- ✧ Meets ISO7637-2 surge specification (varied by test condition).
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 245°C .
- ✧ AEC-Q101 qualified.
- ✧ Compliant to ROHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000us waveform	P_{pp}	6600	Watts
Peak pulse power dissipation on 10/10000us waveform		5200	Watts
Peak pulse current with 10/1000us waveform	I_{pp}	See next table	Amps
Power dissipation on infinite heat Sink at $T_C=25^\circ\text{C}$	P_D	8.0	Watts
Peak forward surge current, 8.3ms single half sine-wave	I_{FSM}	700	Amps
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.9	$^\circ\text{C}/\text{Watt}$

ISO 7637 Test Pulse P5a

Part Number			Part Number		
SM8S24A	Sys Volt	12V	SM8S36A	Sys Volt	24V
	Ri	1 Ω		Ri	4 Ω
	Td	400MS		Td	350MS
	Count	10S		Count	10S
	Us	100V		Us	200V

ELECTRICAL CHARACTERISTICS

Part Number		V _R	I _R @V _R		V _{BR} @ I _T		I _T	V _C @I _{pp}	I _{pp}
Uni-polar	Bi-polar	V	μA@25°C	μA@175°C	min(V)	max (V)	mA	V	A
SM8S10A	---	10.0	5	250	11.1	12.3	5	17.0	388
SM8S11A	---	11.0	5	150	12.2	13.5	5	18.2	363
SM8S12A	---	12.0	5	150	13.3	14.7	5	19.9	332
SM8S13A	---	13.0	5	150	14.4	15.9	5	21.5	307
SM8S14A	---	14.0	5	150	15.6	17.2	5	23.2	284
SM8S15A	---	15.0	5	150	16.7	18.5	5	24.4	270
SM8S16A	---	16.0	5	150	17.8	19.7	5	26.0	253
SM8S17A	---	17.0	5	150	18.9	20.9	5	27.6	239
SM8S18A	---	18.0	5	150	20.0	22.1	5	29.2	226
SM8S20A	---	20.0	5	150	22.2	24.5	5	32.4	204
SM8S22A	---	22.0	5	150	24.4	26.9	5	35.5	186
SM8S24A	---	24.0	5	150	26.7	29.5	5	38.9	170
SM8S26A	---	26.0	5	150	28.9	31.9	5	42.1	157
SM8S28A	---	28.0	5	150	31.1	34.4	5	45.4	145
SM8S30A	---	30.0	5	150	33.3	36.8	5	48.4	136
SM8S32A	---	32.0	5	150	35.5	39.4	5	51.4	128.5
SM8S33A	---	33.0	5	150	36.7	40.6	5	53.3	124
SM8S36A	---	36.0	5	150	40.0	44.2	5	58.1	114
SM8S40A	---	40.0	5	150	44.4	49.1	5	64.5	102
SM8S43A	---	43.0	5	150	47.8	52.8	5	69.4	95.1

Note:

①. For all types maximum V_F = 1.8 V at I_F = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

②. Surge waveform: 10/1000μs

V_R: Stand-off Voltage -- Maximum voltage that can be applied V_{BR}:
Breakdown Voltage

V_C: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I_{pp}

I_R: Reverse Leakage Current

I_T: Test current

Mechanical Data

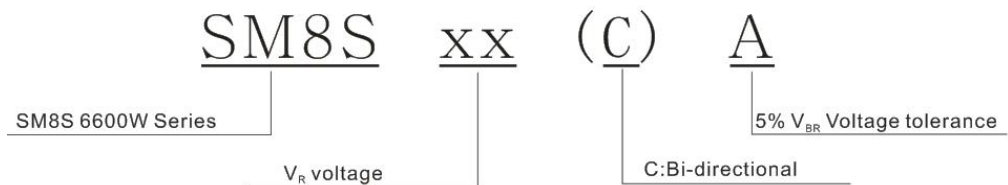
CASE: DO-218AB Molding compound meets UL 94V-0 flammability rating Base

P/NHE3-ROHS-compliant, AEC-Q101 qualified.

Terminals: Matte tin plated leads, solder able per J-STD-002 and JESD22-B102,

HE3 suffix meets JESD 201 class 2 whisker tests.

ORDERING INFORMATION



RATINGS AND CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

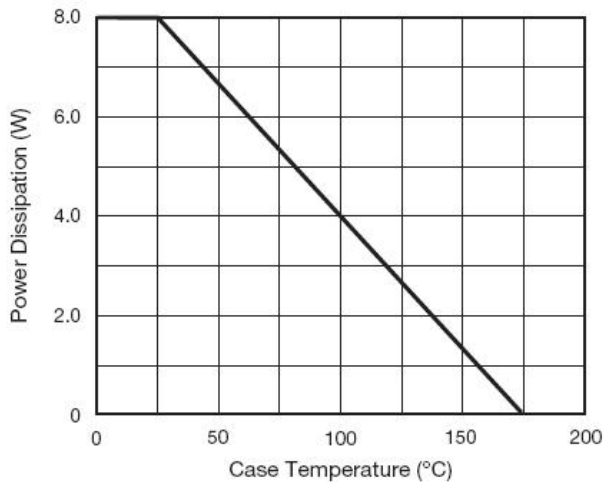


Fig.1 Power Derating Curve

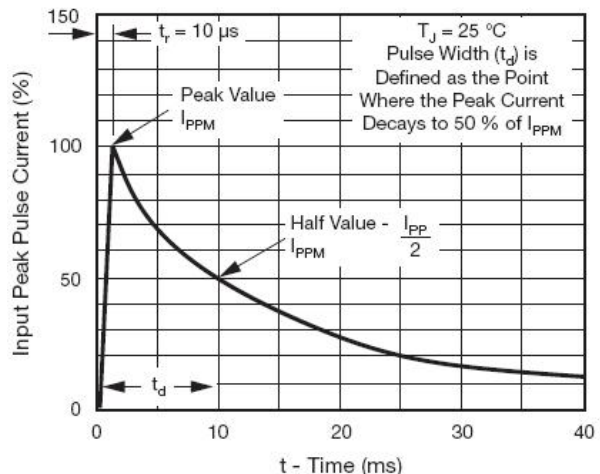


Fig.2 Pulse Waveform

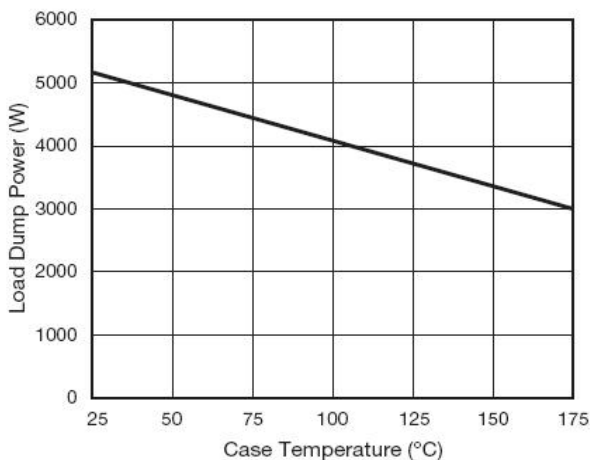


Fig.3 Load Dump Power Characteristics
(10 ms Exponential Waveform)

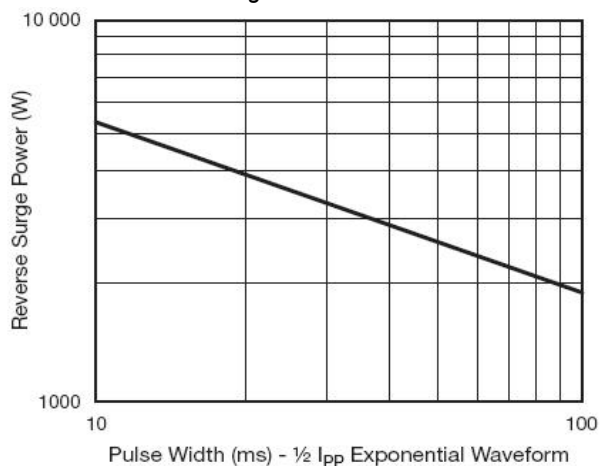


Fig.4 Reverse Power Capability

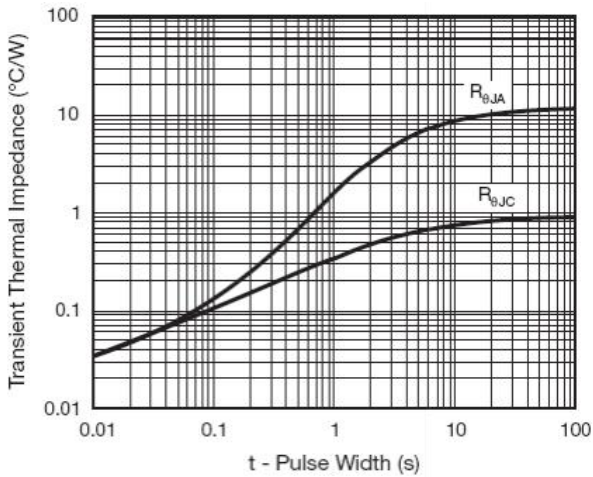


Fig.5 Typical Transient Thermal Impedance

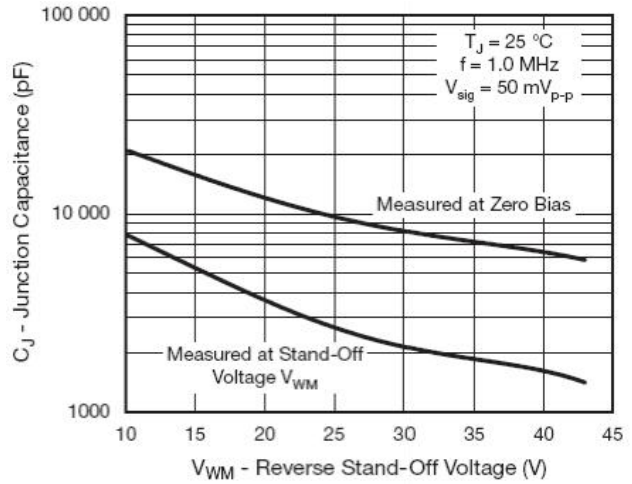
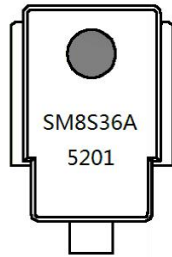


Fig.6 Typical Junction Capacitance

MARKING



SM8S36A: Part Number

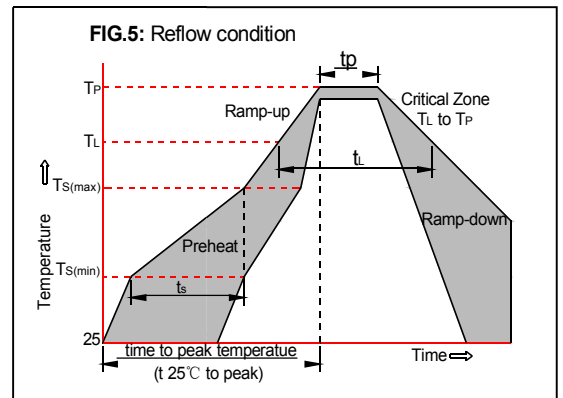
5201: "5"--2015 (year)

"2"--2 (month)

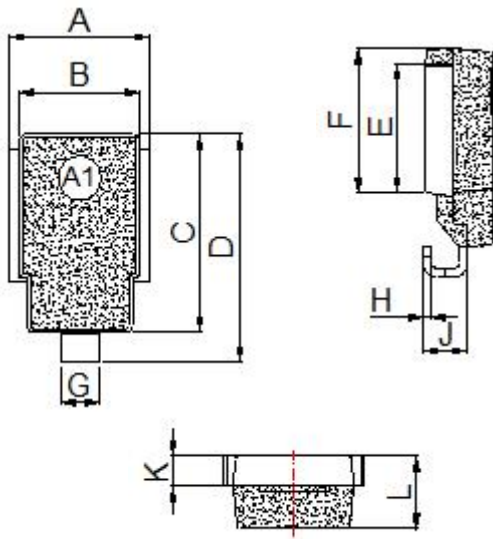
"01"-- (lot)

SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



PACKAGE MECHANICAL DATA



Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.374	0.413	9.5	10.5
B	0.327	0.342	8.3	8.7
C	0.524	0.539	13.3	13.7
D	0.592	0.628	15.0	16.0
E	0.335	0.358	8.5	9.1
F	0.374	0.398	9.5	10.1
G	0.094	0.118	2.4	3.0
H	0.020	0.028	0.5	0.7
J	0.106	0.146	2.7	3.7
K	0.075	0.083	1.9	2.1
L	0.185	0.201	4.7	5.1